AMENDMENTS TO THE CLAIMS:

The listing of claims will replace all prior versions, and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended)A printing workflow system disposed in a network for coordinating production of a document processing job among a plurality of autonomous cells, wherein each cell consists of a logical grouping of resources sufficient for completing at least one type of document processing job, and wherein each cell submits a bid to process the document processing job received by the printing workflow system, the printing workflow system comprising:

a search module for searching which one or more of the cells can execute the job and creating a first subset of cells available to process the document processing job;

a transfer module for transferring information to the first subset of cells about the document processing job;

a receiving module for receiving bids in response to the information transferred to the first subset of cells to process the document processing job;

a selector module for selecting one or more cells to process the document processing job based on information in the bids received; and

a queuing module for dispatching the document processing job to the selected one or more cells for processing.

2. (currently amended)The printing workflow system as recited in claim 1 wherein the printing workflow system stores all information regarding ~~the~~ currently pending document processing jobs in each cell.

3. (currently amended)The printing workflow system as recited in claim 1 wherein the printing workflow system stores all information regarding current document processing jobs that have arrived in ~~the~~ a print shop and have yet to be allocated for production.

4. (currently amended)The printing workflow system as recited in claim 1 wherein the ~~print flow~~ printing workflow system assigns a priority value to each new document processing job that arrives.

5. (currently amended)The printing workflow system as recited in claim 1 wherein the selector module selects the first subset of cells with the lowest bids.

6. (currently amended)In a printing workflow system a method for processing document processing jobs by receiving bids by a plurality of cells to process the document processing job, the method comprising:

searching which one or more of the cells can execute the job and creating a first subset of cells available to process the document processing job;

transferring information to the first subset of cells about the document processing job;

receiving bids in response to the information transferred to the first subset of cells to process the document processing job; and

selecting cells to process the document processing job based on information in the bids received.

7. (currently amended)The method as recited in claim 6 wherein the printing workflow system stores all information regarding ~~the~~ currently pending document processing jobs in each cell.

8. (currently amended)The method as recited in claim 7 wherein the printing workflow system stores all information regarding current document processing jobs

that have arrived in ~~the~~ a print shop and have yet to be allocated for production.

9. (currently amended)The method as recited in claim ~~6~~ 8 wherein the printing workflow system stores all information regarding the currently pending document processing jobs in each cell.

10. (currently amended)The method as recited in claim 6 wherein the printing workflow system assigns a priority value to each new ~~document processing~~ document processing job that arrives.

11. (currently amended)The method as recited in claim 6 wherein the selector module selects the first subset of cells with the lowest bids.

12. (currently amended)A scheduling device in a printing workflow system for scheduling a document processing job ~~in a printing workflow system~~ among a plurality of autonomous cells wherein each cell consists of a logical grouping of resources sufficient for completing at least one type of document processing job, the scheduling device comprising:

a first module for determining whether the document processing job ~~could~~ can be accomplished in one cell or a plurality of cells;

a second module for determining the time it would take to process the document processing job in the first module;

a third module for defining timing parameters to accomplish the document processing job based on information from the second module;

a fourth module for applying the timing parameters to the cell or plurality of cells to process the document processing job by a specific due date; and

a fifth module for queuing the document processing job in one or more cells based ~~in~~ on the information from the fourth module to efficiently process the document processing job in by the specified due date.

13. (currently amended)The scheduling device as recited in claim 12 wherein the printing workflow system stores all information regarding the currently pending document processing jobs by each cell.

14. (currently amended)The scheduling device as recited in claim 12 wherein the printing workflow system stores all information regarding current document jobs that have arrived in ~~the~~ a print shop and have yet to be allocated for production.

15. (currently amended)The scheduling device as recited in claim ~~12~~ 14 wherein the printing workflow system stores all information regarding the currently pending document processing jobs by each cell.

16. (currently amended)In a scheduling device in a printing workflow system, a method for scheduling a document processing job ~~in a printing workflow system~~ among a plurality of autonomous cells wherein each cell consists of a logical grouping of resources sufficient for completing at least one type of document processing job, the method comprising:

determining whether the document processing job could be accomplished in one cell or a plurality of cells;

determining the time it would take to process the document processing job in the first module;

defining timing parameters to accomplish the document processing job based on the information from the second module;

applying the timing parameters to the cell or plurality of cells to process the document processing job by a specified due date; and

queuing the document processing job in one or more cells based ~~in~~ on the information from the fourth module to efficiently process the document processing job ~~in~~ by the specified due date.

17. (currently amended)The method as recited in claim 16 wherein the printing workflow system stores all information regarding ~~the~~ currently pending document processing jobs in each cell.

18. (currently amended)The method as recited in claim 16 wherein the printing workflow system stores all information regarding current document processing jobs that have arrived in ~~the~~ a print shop and have yet to be allocated for production.

19. (currently amended)The method as recited in claim ~~16~~ 18 wherein the printing workflow system stores all information regarding the currently pending document processing jobs in each cell.

20. (original) A device for assigning a unique ID to a document processing job, the device comprising:

a matrix for defining operations performed by a printing workflow system wherein a new operation in the printing workflow system is prepended to the matrix;

a descriptor module for creating a new matrix by assigning a value in the matrix for each operation required to be performed ~~by~~ to complete the document processing job; and

a converter module for converting the new matrix into a numerical format that represent the unique ID.

21. (currently amended)The device as recited in claim 20 wherein the descriptor module assigns a number 1 for each operation that needs to be completed and a number 0 if the operation is not needed.

22. (original) The device as recited in claim 20 wherein the new matrix will result into a binary string.

23. (original) The device as recited in claim 22 wherein the converter module converts the binary string of the new matrix into its decimal equivalent.

24. (original) In a device, a method for assigning a unique ID to a document processing job, the method comprising:

defining operations performed by a printing workflow system wherein a new operation in the printing workflow system is prepended to a matrix.

creating a new matrix by assigning a value in the matrix for each operation required to be performed by the document processing job; and

converting the new matrix into a numerical format that represents the unique ID.

25. (currently amended)The method as recited in claim 24 wherein the descriptor module assigns a number 1 for each operation that needs to be completed and a number 0 if the operation is not needed.

26. (original) The method as recited in claim 24 wherein the new matrix will result into a binary string.

27. (currently amended)The method as recited in claim 24 wherein the unique ID is used to determine which cell the job needs to be routed to ~~completed it~~ in order to complete the document processing job.

28. (currently amended)~~A~~ The device according to claim 20 further including,

a device for assigning ~~a~~an ~~descriptive~~ ID to a document processing job, the device comprising:

~~a unique ID for identifying uniquely the document processing job;~~

a first module for appending to the unique ID a due date of the document processing job;

a second module for appending to the unique ID a due time of the document processing job;

a third module for appending to the unique ID the number of duplicates needed for the document processing job;

a fourth module for appending to the unique ID a number of units associated with each operation in the document processing job; and

a fifth module for creating ~~the~~ descriptive ID by appending the information in the first, second, third and fourth modules into a string.

29. (currently amended)The device as recited in claim 28 wherein the string is a decimal string.

30. (original) The device as recited in claim 29 further comprising a converter module for converting the string into hexadecimal.

31. (currently amended)~~In a device, a method for~~The method of claim 24 further including,

assigning a ~~descriptive~~ unique ID to a document processing job, the method ~~comprising~~:

~~identifying a unique ID for the document processing job;~~

appending to the unique ID a due date of the document processing job;

appending to the unique ID a due time of the document processing job;

appending to the unique ID the number of duplicates needed for the document processing job;

appending to the unique ID a number of units associated with each operation in the document processing job; and

creating ~~the~~a descriptive ID by appending the information associated with the unique ID and the due date, due time, number of duplicates and number of units with each operation into a string.

32. (currently amended)The method as recited in claim 31 wherein the string is a decimal string.

33. (original) The method as recited in claim 32 further comprising a converter module for converting the string into hexadecimal.

34. (currently amended)A scheduling device for scheduling a document processing job in a printing workflow system, the scheduling device comprising:

a first module for determining whether there are any scheduling constraints for a document processing job optimization problem;

a second module for determining whether ~~the~~ a cost function is linear; and

a third module for optimizing the cost function subject to the scheduling constraints by using standard linear programming techniques.

35. (original) The scheduling device as recited in claim 34 wherein the standard linear programming technique is used to compute Pareto optimal solutions.

36. (currently amended)The scheduling device as recited in claim 35 further comprising determining whether the ~~document processing~~ document processing job can be done entirely in one cell.

37. (currently amended)The scheduling device as recited in claim 35 further comprising splitting jobs into sub-jobs when the ~~document processing~~ document processing cannot be done entirely in one cell.

38. (new) A printing workflow system disposed in a network for coordinating production of a document processing job among a plurality of autonomous cells, wherein each cell consists of a logical grouping of resources sufficient for completing at least one type of document processing job, the printing workflow system comprising:

a search module for searching which one or more of the cells can execute the job and creating a first subset of cells available to process the document processing job;

a scheduling device for splitting document processing jobs that cannot be entirely processed in a single cell into sub-jobs capable of being entirely processed in a single cell;

a transfer module for transferring information to the first subset of cells about the document processing job;

a receiving module for receiving bids from the first subset of cells in response to the information transferred to the first subset of cells to process the document processing job;

a selector module for selecting one or more cells to process the document processing job based on information in the bids received; and

a queuing module for dispatching the document processing job to the selected one or more cells for processing.

39. (new) The printing workflow system as recited in claim 38 wherein the scheduling device assigns the sub-jobs as independent document processing jobs.